



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,066	10/06/2003	Xiaofan Ren	10020/27702	6737
26646	7590	08/12/2005	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			GARRETT, DAWN L	
			ART UNIT	PAPER NUMBER
			1774	

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/680,066

Applicant(s)

REN ET AL.

Examiner

Dawn Garrett

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

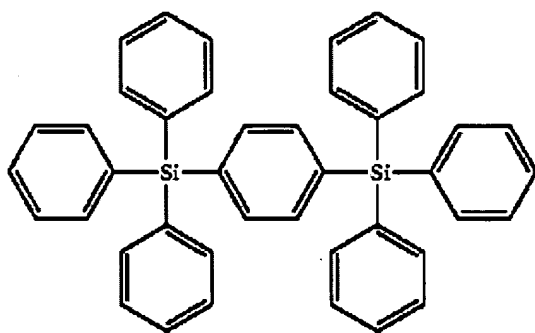
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1-26-04; 2-12-04; 12/2/04; 3/28/05; 12/5/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This Office action is responsive to applicant's election of species response dated May 23, 2005. Applicant selected the single species of Formula VI, the host material in which X is Si, Y is phenyl, and Ar<sup>1</sup>, Ar<sup>2</sup>, and Ar<sup>3</sup> are unsubstituted phenyl, and the host material of claim 20 as the ultimate species representative of the elected species for search purposes (shown below):



Applicant indicates claims 6-9 are non-elected (the examiner has determined claim 21 is within the elected species – although this compound varies from the ultimate species). Claims 1-5, 10-19 and 21-38 are under consideration at this time.

***Claim Objections***

2. Claims 29, 31, and 33 are objected to because of the following informalities:
- It is suggested the full chemical name of “mCP” be given in claim 31 for clarity.
  - Claim 29 is a duplicate of claim 26.
  - In claim 33, it is suggested “HTL” be changed to “hole transporting layer” for clarity.
  - In claim 33, “time” should be changed to “times”.

Art Unit: 1774

- e. In claim 33, it appears “between the and the emissive layer and the hole transporting layer” should be changed to “between the emissive layer and the hole transporting layer”.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-5, 10-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 1 and 22 recite “each R is selected from alkyl, alkenyl, aryl, and aralkyl”. It is unclear if this recitation includes both “R<sub>2</sub>” and “R<sub>3</sub>”. If it does not include these groups, then they are undefined. In addition, it is not clear if “each R is selected from alkyl, alkenyl, aryl, and aralkyl” includes both R’ and R’’, because these groups are previously defined as phenyl or alkyl, which is not as broad as alkyl, alkenyl, aryl and aralkyl. Clarification and/or correction are required. (Note: Unelected claim 6 also has the same issue).

6. Claims 1 and 22 are vague and indefinite for reciting “each X is independently selected from Si, Ge, Sn, Pb, Se, Ti, Zr and Hf”. It is unclear if X may be something different within a single compound. If so, this does not seem to be a conventional way of describing a compound and its variables. Usually a single variable of a compound has a set meaning in every occurrence in a compound formula. Clarification and/or correction is required. (Note: Unelected claim 6 also has the same issue.)

Art Unit: 1774

7. Claims 2 and 23 are indefinite because “X<sup>1</sup>” and “X<sup>2</sup>” are recited; however, parent claim 1 does not recite “X<sup>1</sup>” and “X<sup>2</sup>”.
8. Claim 10 recites “each R is selected from alkyl, alkenyl, aryl, and aralkyl”. It is unclear if this recitation includes both “R<sub>2</sub>” and “R<sub>3</sub>”. If not, “R<sub>2</sub>” and “R<sub>3</sub>” are undefined.
9. Claim 28 is indefinite, because parent claim 22 does not recite a “first organic layer” or a “hole transport layer” or a “second organic layer”. Accordingly, the metes and bounds of claim 28 can not be determined and this claim has not been further treated on the merits.
10. Claim 30 is indefinite, because parent claim 22 does not recite a “first organic layer”. Accordingly, the metes and bounds of claim 30 can not be determined and this claim has not been further treated on the merits.
11. Claim 31 is indefinite, because parent claim 22 does not recite a “first organic layer”. Accordingly, the metes and bounds of claim 31 can not be determined and this claim has not been further treated on the merits.

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

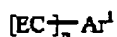
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-3, 5, 10-23, 25-27, 29, 33-35, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolk et al. (US 2003/0219625; “Wolk”). Wolk teaches materials for an organic electroluminescent device and the devices comprising these materials (see front page).

Art Unit: 1774

Wolk teaches a composition for a layer of an organic electroluminescent device comprising

Formula I (see par. 5-7) (n may be 2):

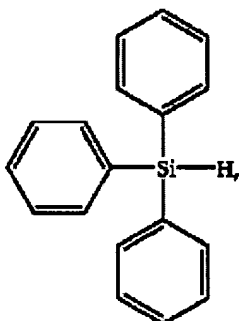


I

Ar<sup>1</sup> may be the following (see par. 9, page 1, first column):



“EC” may be a monovalent radical of the following (see par. 11, page 7, first column):



This material reads upon applicant's elected host material. Wolk teaches the compositions may be part of a light emitting region (see par. 125, page 22). Wolk further teaches it is known to incorporate phosphorescent emitters in a light emitting matrix and specifically iridium containing complexes are known in the art (see par. 123-124). Since Wolk teaches the same host material as recited by applicant the energy gap properties of claims 5, 25, 26, 29, 37, and 38 are inherently met by the Wolk material. With regard to claims 20 and 21, Wolk teaches a radical of Ar<sup>1</sup> is joined with a monovalent radical of the EC groups and therefore either isomeric form of claims 20 and 21 may be formed since locations for the radicals (and location for bonding) are

Art Unit: 1774

not specified. With regard to claims 27 and 33, Wolk further teaches other layers such as hole transport layers, electron transport layers, hole injection layers, electron injection layers, hole blocking layers, electron blocking layers and buffer layer (see par. 117, pg. 21). Although Wolk does not show an example device comprising a material according to Formula I with the specific EC and Ar<sup>1</sup> groups according to the elected species, it would have been obvious to one of ordinary skill in the art to have formed this material, because Wolk teaches the appropriate groups for forming such a compound.

14. Claims 4, 24, 32, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolk et al. (US 2003/0219625; "Wolk") in view of Baldo (WO 00/70655). Wolk is relied upon as set forth above. Wolk teaches the host species under consideration may be part of a light emitting region (see par. 125, page 22 and above rejection). Wolk further teaches it is known to incorporate phosphorescent emitters in a light emitting matrix and specifically iridium containing complexes are known in the art (see par. 123-124). Wolk fails to specify a blue phosphorescent material; however, Wolk does discuss cyclometallated iridium compounds of WO 00/70655 and incorporates by reference the WO document (see par. 123). WO 00/70655 teaches phosphorescing iridium compounds that emit light at 510 nm (a blue region) (see Example 4, page 13 and entire document). It would have been obvious to one of ordinary skill in the art to have selected one of the blue phosphorescent materials taught by Baldo in the Wolk light emitting layer, because Wolk teaches the iridium compounds taught by Baldo are desirable as phosphorescent materials of the device.

Art Unit: 1774

***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571)272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached at (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is now **(571) 273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dawn Garrett  
Primary Examiner  
Art Unit 1774

D.G.  
August 6, 2005